

Scaled data based on original data using

LM-41-14 Approved Method for Photometric Testing Of Indoor Fluorescent Luminaires

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: HALO COMMERCIAL

Report Number: P580972

Luminaire Tested: **HC450D010-HM44560940-41WWBB**

Issue Date: 9/9/2021

**Test Information**

Test Method: LM-41-14  
Report Number: P580972  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2106-266-17)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 9/9/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: HALO COMMERCIAL  
Catalog Number: HC450D010-HM44560940-41WWBB  
Description: HALO COMMERCIAL 4" ROUND, NEW CONSTRUCTION FRAME, WITH 4" WALLWASH DISTRIBUTION, WHITE BAFFLE TRIM  
Light Source: (1) HIGH LUMEN LED 90CRI / 4000K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 3324.5 lumens  
Efficiency: N/A  
Efficacy: 69.3 lumens/watt  
Spacing Criteria (0/90/45): 1.11 / 1.04 / 1.12  
Luminous Opening: Circular (Dia: 0.33' x H: 0')  
CIE Type: Direct

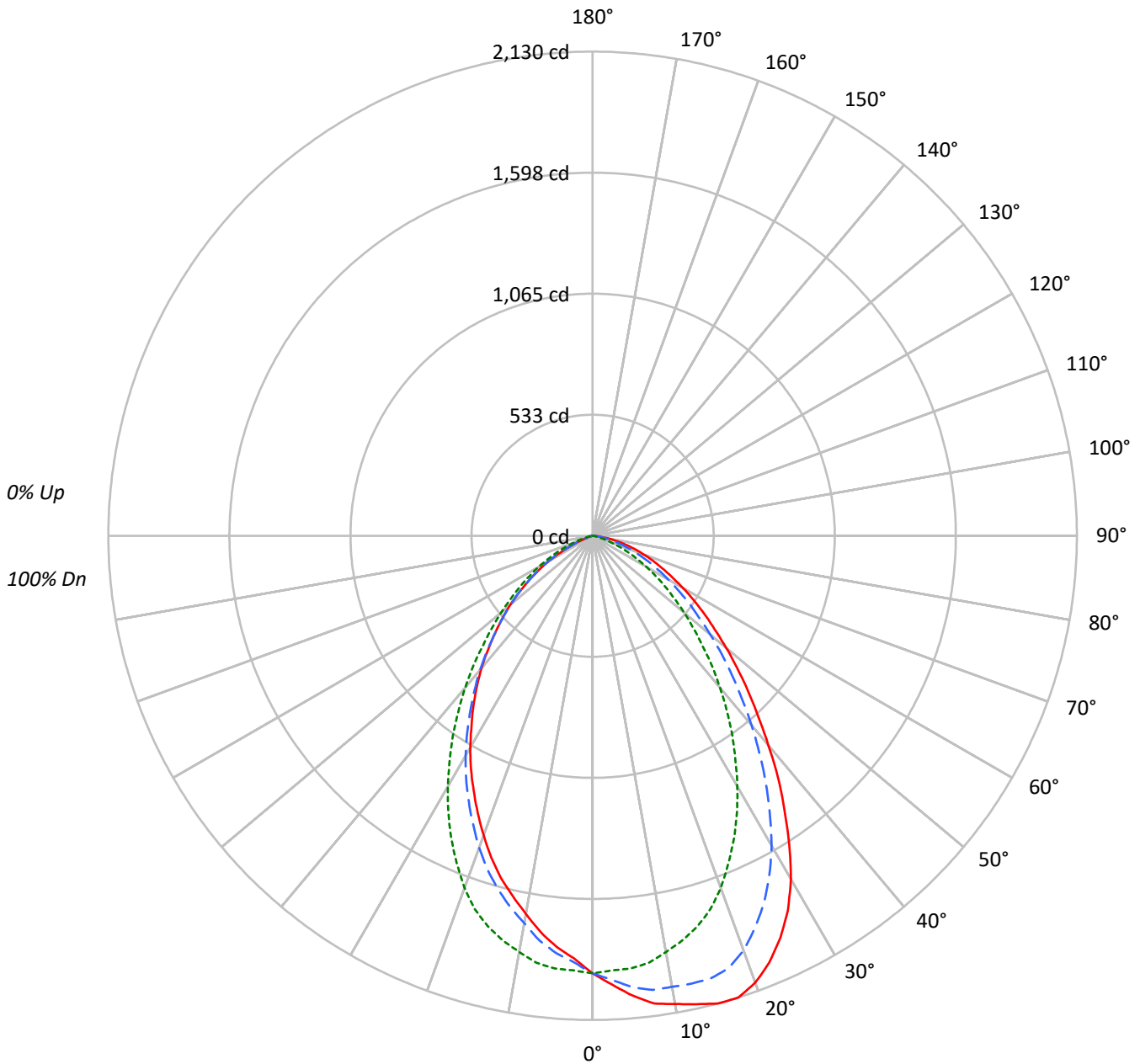
Input Watts (W): 48  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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### Luminous Intensity Polar Plot





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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|---|--|--|--|--|--|--|----|--|--|--|--|--|--|--|--|---|
| RF  | 20  |     |     |     |     |     |     |     |     | 20  |     |     |     |     |     |     |     |     | 20 |    |   |  |  |  |  |  |  | 20 |  |  |  |  |  |  |  |  |   |
| RC  | 80  |     |     |     |     |     |     |     |     | 50  |     |     |     |     |     |     |     |     | 30 |    |   |  |  |  |  |  |  | 10 |  |  |  |  |  |  |  |  | 0 |
| RW  | 70  | 50  | 30  | 10  | 70  | 50  | 30  | 10  | 50  | 30  | 10  | 50  | 30  | 10  | 50  | 30  | 10  | 50  | 30 | 10 | 0 |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| RCR |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 100 |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 1   | 111 | 108 | 104 | 101 | 109 | 105 | 102 | 100 | 101 | 99  | 97  | 97  | 95  | 94  | 94  | 92  | 91  | 89  |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 2   | 103 | 97  | 91  | 87  | 101 | 95  | 90  | 86  | 92  | 87  | 84  | 88  | 85  | 82  | 85  | 83  | 80  | 78  |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 3   | 96  | 87  | 80  | 75  | 94  | 86  | 79  | 74  | 83  | 78  | 73  | 80  | 76  | 72  | 78  | 74  | 71  | 69  |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 4   | 89  | 79  | 72  | 66  | 87  | 78  | 71  | 65  | 75  | 69  | 65  | 73  | 68  | 64  | 71  | 67  | 63  | 61  |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 5   | 83  | 72  | 64  | 58  | 81  | 71  | 64  | 58  | 69  | 62  | 58  | 67  | 61  | 57  | 65  | 60  | 56  | 55  |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 6   | 77  | 66  | 58  | 52  | 75  | 65  | 57  | 52  | 63  | 57  | 52  | 61  | 56  | 51  | 60  | 55  | 51  | 49  |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 7   | 72  | 60  | 53  | 47  | 71  | 59  | 52  | 47  | 58  | 51  | 47  | 57  | 51  | 46  | 55  | 50  | 46  | 44  |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 8   | 68  | 56  | 48  | 43  | 66  | 55  | 48  | 43  | 54  | 47  | 42  | 53  | 47  | 42  | 51  | 46  | 42  | 40  |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 9   | 64  | 52  | 44  | 39  | 62  | 51  | 44  | 39  | 50  | 43  | 39  | 49  | 43  | 39  | 48  | 43  | 39  | 37  |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 10  | 60  | 48  | 41  | 36  | 59  | 47  | 41  | 36  | 46  | 40  | 36  | 46  | 40  | 36  | 45  | 39  | 36  | 34  |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |

**AVERAGE LUMINANCE (cd/sqm):**

|     | 0°     | 90°    | 180°   |
|-----|--------|--------|--------|
| 0°  | 237391 | 237391 | 237391 |
| 5°  | 251534 | 236614 | 224740 |
| 10° | 261982 | 232837 | 211582 |
| 15° | 271994 | 227249 | 198926 |
| 20° | 274560 | 216345 | 184003 |
| 25° | 265675 | 200090 | 168420 |
| 30° | 248393 | 181310 | 153252 |
| 35° | 221379 | 161193 | 137688 |
| 40° | 193525 | 140197 | 122549 |
| 45° | 168576 | 118914 | 106005 |
| 50° | 147104 | 100877 | 90899  |
| 55° | 128942 | 83610  | 73589  |
| 60° | 112787 | 67544  | 54050  |
| 65° | 98269  | 50346  | 30383  |
| 70° | 85904  | 32566  | 9845   |
| 75° | 70485  | 16966  | 2573   |
| 80° | 52493  | 7814   | 1989   |
| 85° | 30994  | 3963   | 3963   |



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 181.7  | 5.5       |
| 10°-20°   | 508.4  | 15.3      |
| 20°-30°   | 702.9  | 21.1      |
| 30°-40°   | 706.8  | 21.3      |
| 40°-50°   | 570.3  | 17.2      |
| 50°-60°   | 385.7  | 11.6      |
| 60°-70°   | 196.3  | 5.9       |
| 70°-80°   | 62.8   | 1.9       |
| 80°-90°   | 9.6    | 0.3       |
| 90°-100°  | 0.0    | 0.0       |
| 100°-110° | 0.0    | 0.0       |
| 110°-120° | 0.0    | 0.0       |
| 120°-130° | 0.0    | 0.0       |
| 130°-140° | 0.0    | 0.0       |
| 140°-150° | 0.0    | 0.0       |
| 150°-160° | 0.0    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-30°    | 1393.0 | 41.9      |
| 0°-40°    | 2099.8 | 63.2      |
| 0°-60°    | 3055.8 | 91.9      |
| 0°-90°    | 3324.5 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 3324.5 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 45°  | 90°  | 135° | 180° | Flux |
|-----|------|------|------|------|------|------|
| 0°  | 1925 | 1925 | 1925 | 1925 | 1925 |      |
| 5°  | 2032 | 1993 | 1911 | 1843 | 1815 | 196  |
| 15° | 2130 | 2015 | 1780 | 1610 | 1558 | 600  |
| 25° | 1952 | 1782 | 1470 | 1290 | 1238 | 893  |
| 35° | 1470 | 1328 | 1070 | 936  | 914  | 919  |
| 45° | 966  | 865  | 682  | 608  | 608  | 749  |
| 55° | 600  | 517  | 389  | 340  | 342  | 539  |
| 65° | 337  | 274  | 172  | 112  | 104  | 338  |
| 75° | 148  | 104  | 36   | 8    | 5    | 159  |
| 85° | 22   | 11   | 3    | 3    | 3    | 29   |
| 90° | 0    | 0    | 0    | 0    | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    | 112.5° | 135°   | 157.5° | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1924.6 | 1924.6 | 1924.6 | 1924.6 | 1924.6 | 1924.6 | 1924.6 | 1924.6 | 1924.6 |
| 2.5°  | 1976.7 | 1965.7 | 1954.9 | 1935.6 | 1913.8 | 1891.9 | 1878.1 | 1867.2 | 1861.8 |
| 5°    | 2031.5 | 2017.7 | 1993.2 | 1952.1 | 1911.0 | 1872.7 | 1842.6 | 1823.3 | 1815.1 |
| 7.5°  | 2075.3 | 2056.1 | 2015.1 | 1957.5 | 1894.5 | 1834.3 | 1796.0 | 1768.7 | 1757.7 |
| 10°   | 2091.7 | 2069.8 | 2015.1 | 1938.4 | 1859.0 | 1785.0 | 1730.4 | 1702.9 | 1689.3 |
| 12.5° | 2110.8 | 2086.3 | 2017.7 | 1922.0 | 1823.3 | 1735.8 | 1672.8 | 1637.3 | 1623.5 |
| 15°   | 2130.0 | 2097.2 | 2015.1 | 1897.3 | 1779.6 | 1678.3 | 1609.8 | 1574.3 | 1557.8 |
| 17.5° | 2130.0 | 2091.7 | 1993.2 | 1856.2 | 1722.0 | 1615.3 | 1538.6 | 1497.5 | 1483.9 |
| 20°   | 2091.7 | 2047.8 | 1941.1 | 1790.6 | 1648.2 | 1533.2 | 1459.2 | 1418.2 | 1401.8 |
| 22.5° | 2031.5 | 1982.2 | 1867.2 | 1711.1 | 1560.5 | 1448.3 | 1374.3 | 1336.0 | 1319.7 |
| 25°   | 1952.1 | 1902.8 | 1782.3 | 1620.8 | 1470.2 | 1358.0 | 1289.5 | 1253.9 | 1237.5 |
| 27.5° | 1859.0 | 1804.2 | 1683.7 | 1522.2 | 1374.3 | 1267.6 | 1204.6 | 1171.8 | 1158.1 |
| 30°   | 1744.0 | 1691.9 | 1574.3 | 1415.4 | 1273.0 | 1174.5 | 1117.1 | 1087.0 | 1076.0 |
| 32.5° | 1609.8 | 1566.1 | 1451.1 | 1303.2 | 1169.0 | 1078.7 | 1026.6 | 1002.1 | 991.1  |
| 35°   | 1470.2 | 1429.1 | 1327.8 | 1190.9 | 1070.5 | 985.6  | 936.3  | 919.9  | 914.4  |
| 37.5° | 1338.8 | 1303.2 | 1204.6 | 1078.7 | 969.2  | 895.2  | 851.5  | 840.5  | 835.0  |
| 40°   | 1201.9 | 1177.3 | 1087.0 | 971.9  | 870.7  | 804.9  | 769.4  | 761.1  | 761.1  |
| 42.5° | 1078.7 | 1051.3 | 971.9  | 867.9  | 777.6  | 711.8  | 687.2  | 678.9  | 681.7  |
| 45°   | 966.4  | 939.1  | 865.1  | 769.4  | 681.7  | 627.0  | 607.7  | 607.7  | 607.7  |
| 47.5° | 862.5  | 837.8  | 769.4  | 670.7  | 599.6  | 555.8  | 536.6  | 536.6  | 539.3  |
| 50°   | 766.6  | 750.2  | 673.5  | 588.6  | 525.7  | 484.6  | 470.9  | 468.2  | 473.7  |
| 52.5° | 676.3  | 657.1  | 588.6  | 512.0  | 451.8  | 418.9  | 405.2  | 402.5  | 405.2  |
| 55°   | 599.6  | 577.6  | 517.4  | 443.6  | 388.8  | 355.9  | 339.5  | 336.7  | 342.2  |
| 57.5° | 525.7  | 509.2  | 446.2  | 380.6  | 328.6  | 295.7  | 282.0  | 276.5  | 279.3  |
| 60°   | 457.2  | 440.8  | 383.2  | 320.4  | 273.8  | 240.9  | 221.7  | 216.3  | 219.1  |
| 62.5° | 394.2  | 380.6  | 325.8  | 265.6  | 219.1  | 188.9  | 169.7  | 156.1  | 161.5  |
| 65°   | 336.7  | 323.0  | 273.8  | 213.5  | 172.5  | 139.6  | 112.2  | 101.3  | 104.1  |
| 67.5° | 287.5  | 271.0  | 224.5  | 169.7  | 128.6  | 93.1   | 63.0   | 57.5   | 57.5   |
| 70°   | 238.2  | 221.7  | 180.7  | 131.4  | 90.3   | 49.3   | 27.3   | 27.3   | 27.3   |
| 72.5° | 191.6  | 178.0  | 139.6  | 98.5   | 57.5   | 21.9   | 11.0   | 11.0   | 11.0   |
| 75°   | 147.9  | 136.9  | 104.1  | 68.4   | 35.6   | 11.0   | 8.2    | 5.4    | 5.4    |
| 77.5° | 109.5  | 98.5   | 73.9   | 46.5   | 21.9   | 5.4    | 5.4    | 5.4    | 5.4    |
| 80°   | 73.9   | 65.8   | 49.3   | 27.3   | 11.0   | 2.8    | 2.8    | 2.8    | 2.8    |
| 82.5° | 43.8   | 38.3   | 27.3   | 13.7   | 5.4    | 2.8    | 2.8    | 2.8    | 2.8    |
| 85°   | 21.9   | 16.4   | 11.0   | 5.4    | 2.8    | 2.8    | 2.8    | 2.8    | 2.8    |
| 87.5° | 5.4    | 2.8    | 2.8    | 2.8    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |



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— 0°-180°    - - 45°-225°    - - - - 90°-270°







(END OF REPORT)